

# Visible-Light-Responsive Catalyst Development for VOC Remediation (VLRCAT)

Completed Technology Project (2015 - 2016)



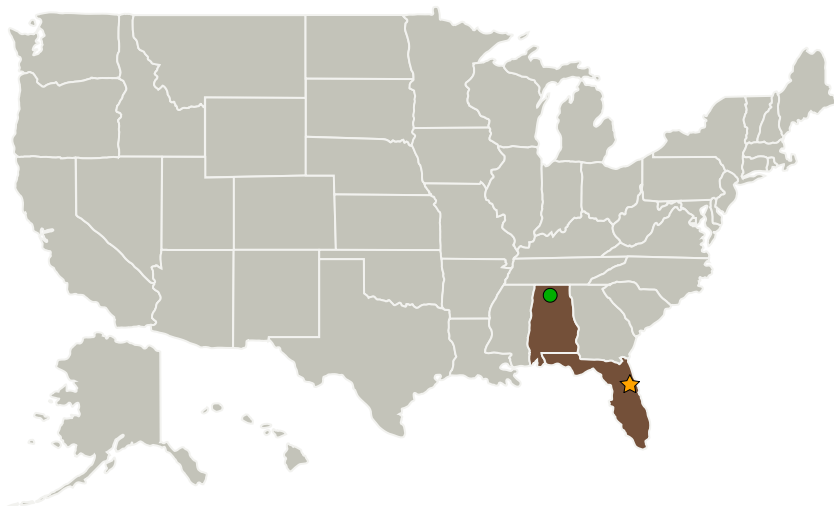
## Project Introduction

Photocatalysis is a process in which light energy is used to activate oxidation/reduction reactions. Catalysts can utilize solar and/or visible wavelength LED lamps as an activation source, replacing mercury-containing UV lamps, to create a greener, more energy-efficient means for air and water revitalization. Develop rugged reactor test bed for catalyst testing with exchangeable light sources, optimize KSC-developed VLR-catalysts to treat recalcitrant trace contaminants found in closed-loop air systems such as ISS, and advance TRL to align with AES goals for FY16/17 scale-up testing.

## Anticipated Benefits

Greener, more energy-efficient means for air and water revitalization.

## Primary U.S. Work Locations and Key Partners



Visible-Light-Responsive  
Catalyst Development for VOC  
Remediation

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Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Engineering Services Contract	Supporting Organization	Industry	
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
University of Florida	Supporting Organization	Academia	Gainesville, Florida

Co-Funding Partners	Type	Location
NASA Postdoctoral Fellowship Program	NASA Other	
Space Technology Mission Directorate(STMD)	NASA Mission Directorate	

Primary U.S. Work Locations	
Alabama	Florida

## Links

Visible-Light-Responsive Catalysts Using Quantum Dot-Modified TiO<sub>2</sub> for Air and Water Purification  
 (<http://repositories.tdl.org/ttu-ir/bitstream/handle/2346/59639/ICES-2014-28.pdf?sequence=1>)

## Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Kennedy Space Center (KSC)

### Responsible Program:

Center Innovation Fund: KSC CIF

## Project Management

### Program Director:

Michael R Lapointe

### Program Manager:

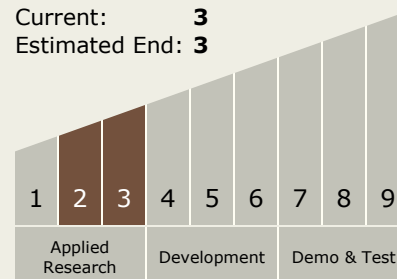
Barbara L Brown

### Principal Investigator:

Paul E Hintze

## Technology Maturity (TRL)

Start: **2**  
 Current: **3**  
 Estimated End: **3**



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## Technology Areas

### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.3 Mechanical Systems
    - └ TX12.3.5 Certification Methods

## Target Destination

Earth